

Course guide

340036 - ORPR - Operations Management

Last modified: 19/05/2026

Unit in charge: Vilanova i la Geltrú School of Engineering
Teaching unit: 732 - OE - Department of Management.
709 - DEE - Department of Electrical Engineering.

Degree: BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN INDUSTRIAL DESIGN AND PRODUCT DEVELOPMENT ENGINEERING (Syllabus 2009). (Optional subject).
BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Compulsory subject).
BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Compulsory subject).

Academic year: 2026 **ECTS Credits:** 6.0 **Languages:** Catalan

LECTURER

Coordinating lecturer: JASMINA BERBEGAL MIRABENT

Others: Primer quadrimestre:
SEVERINO ABAD PEQUEÑO - M5111, M5112, M5121, M5122, X5011, X5012, X5021, X5022
JASMINA BERBEGAL MIRABENT - M5011, M5012, M5021
ORIOL CUATRECASAS CASTELLSAGUES - M5011, M5012, M5021
MICHAEL UNG-THEAN ALBIACH - M5112, X5011
ELSA VIDAL DURAN - M5111, M5122, X5012, X5022

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

1. CE15. Basic knowledge of production and fabrication systems.
2. CE17. Applied knowledge of business organization.

Transversal:

4. SELF-DIRECTED LEARNING - Level 2: Completing set tasks based on the guidelines set by lecturers. Devoting the time needed to complete each task, including personal contributions and expanding on the recommended information sources.
3. EFFECTIVE USE OF INFORMATION RESOURCES - Level 2. Designing and executing a good strategy for advanced searches using specialized information resources, once the various parts of an academic document have been identified and bibliographical references provided. Choosing suitable information based on its relevance and quality.
8. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 2. Using strategies for preparing and giving oral presentations. Writing texts and documents whose content is coherent, well structured and free of spelling and grammatical errors.
12. ENTREPRENEURSHIP AND INNOVATION - Level 2. Taking initiatives that give rise to opportunities and to new products and solutions, doing so with a vision of process implementation and market understanding, and involving others in projects that have to be carried out.
16. TEAMWORK - Level 2. Contributing to the consolidation of a team by planning targets and working efficiently to favor communication, task assignment and cohesion.

TEACHING METHODOLOGY

Presentation-synthesis

In the sessions the teacher makes a summary of the topic. This presentation is intended as a guide work study students, with the function of introducing the item, propose material for study, clarify doubts and synthesis.

Each topic will be provided with:

- Power Point presentations used in class in pdf and other supplementary material will be available on the Digital Campus.
- Bibliography indicating specific location, preferring to material in electronic format.

Working activities and exercises

- Problems and Exercises for fixing the concepts introduced in the presentation.

Casework and articles

The work on cases will be based on questions raised by the professor.

The casework seeks to promote the following capabilities:

- Understanding of the situation presented and the ability to synthesize the most relevant issues
- Apply the concepts to practical cases.
- Capturing the complexity of real life situations, different points of view and various dimensions of the organizational and management issues
- Ability to exchange views and discuss, and ability to learn from the debate

Practice

Practices are held in groups of up to four members, to be established at the beginning of the course and will be maintained.

These practices serve as the backbone of learning, following the principles of project based learning. For each practice it will provided a dossier that shall include the objectives, description, date of delivery, and criteria assessment. Each practice will consist of a report and a presentation at pp.

Oral presentations

Each student will present oral argument at least once during the term. The days of presentation are announced at the beginning of the course.

Individual tutoring

The teacher will follow up the student progress and supervise their practices and work, providing feedback on their progress, the degree of achievement of the objectives of their work, giving directions for improvement.

LEARNING OBJECTIVES OF THE SUBJECT

1. Know production function, cost estimating and production processes.
2. Apply basic techniques and tools for safety and manufacturing management
3. Apply techniques and tools for manufacturing planning in different levels: overall planning, manufacturing planning, materials calculations.
4. Understand and apply different techniques and basic tools for decision making in management.
5. Avaluation of socks management oriented to market and budgets.

STUDY LOAD

Type	Hours	Percentage
Hours small group	30,0	20.00
Self study	90,0	60.00
Hours large group	30,0	20.00

Total learning time: 150 h

CONTENTS

Module 1: Craft. Economy of scale. Lean Management

Description:

- 1.1. Traditional model
- 1.2. Implementation models
- 1.3. Production organization
- 1.4. Production and product models

Full-or-part-time: 25h

Theory classes: 5h
Practical classes: 5h
Self study : 15h

Module 2: Value. Product. Process

Description:

- 2.1. Quality function deployment. Housing example
- 2.2. Quality function deployment. QFD
- 23. Value analysis. Value system. Simultaneous engineering

Full-or-part-time: 25h

Theory classes: 5h
Practical classes: 5h
Self study : 15h

Module 3: Identification of the product

Description:

- 3.1. The productive processes. Key figures: Cycle, lead time, productivity and stock
- 3.2. Determination of the key magnitudes in balanced processes. Relationship between them
- 3.3. Determination of key magnitudes in unbalanced processes. Stock
- 3.4. The conventional mass management model: characteristics. Implementation
- 3.5. Comparison of mass production and lean management

Full-or-part-time: 25h

Theory classes: 5h
Practical classes: 5h
Self study : 15h

Module 4: Quality management

Description:

- 4.1. Statistical process control. SPC
- 4.2. Organization of the workplace
- 4.3. Jidoka
- 4.4. Quality

Full-or-part-time: 25h

Theory classes: 5h

Practical classes: 5h

Self study : 15h

Module 5: Pull

Description:

- 5.1. Mass production management
- 5.2. Management based on limitations or bottlenecks (TOC)
- 5.3. Just-in-time (JIT)
- 5.4. Logistics and production efficiency

Full-or-part-time: 25h

Theory classes: 5h

Practical classes: 5h

Self study : 15h

Module 6: Perfection. Continuous improvement

Description:

- 6.1. Definition of quality
- 6.2. Implementation of quality in production processes
- 6.3. Total quality models
- 6.4. Tools for the analysis and improvement of processes

Full-or-part-time: 25h

Theory classes: 5h

Practical classes: 5h

Self study : 15h

GRADING SYSTEM

In the evaluation of the student will be considered both the work done in groups and the individual achievement in written exams. These exams consist of short questions or multiple choice, open questions or development.

Students will also have a mark obtained from the oral presentation of the assignments and another mark for participation in terms of attendance and contributions to the theoretical and practical lessons.

$NF = \text{Exams mark} \times 0.7 + \text{Assignments} \times 0.2 + \text{Oral presentation mark} + \text{In-class participation} \times 0.1$

$EXAMS\ MARK = \text{Mid-term exam} \times 0.35 + \text{Final exam} \times 0.65$

Students who may be eligible for reevaluation according to academic regulations may improve on a written exam only the corresponding mark "Exams Mark", which has a weight of 70% on the final grade of the subject, as indicated in the formula above.

BIBLIOGRAPHY

Basic:

- Cuatrecasas Arbós, Lluís. Organización de la producción y dirección de operaciones: sistemas actuales de gestión eficiente y competitiva [on line]. Madrid: Díaz de Santos, 2011 [Consultation: 14/03/2024]. Available on: <https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=3220133>. ISBN 9788479789978.
- Cuatrecasas Arbós, Lluís. Diseño avanzado de procesos y plantas de producción flexible: técnicas de diseño y herramientas gráficas con soporte informático : diseño e implantación para todos los modelos de gestión actuales: producción industrial masiva convencional, producción basada en las limitaciones (TOC), lean manufacturing (just in time), líneas de producción multiproducto. Barcelona: Profit, 2009. ISBN 9788415735472.
- Liker, Jeffrey K. Las claves del éxito de Toyota. Barcelona: Gestión 2000, 2010. ISBN 9788498750744.
- Goldratt , Eliyahu M.; Cox, Jeff. La Meta : un proceso de mejora continua [on line]. 3a ed. Madrid: Díaz de Santos, 2005 [Consultation : 14/02/2024]. Available on : <https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?pq-origsite=primo&docID=6776901>. ISBN 847978718X.
- Ruiz-Canela López, José. La gestión por calidad total en la empresa moderna. Paracuellos de Jarama, Madrid: RA-MA, 2004. ISBN 8478975926.
- Coll Solà, Joan. Organització industrial [on line]. Barcelona: Edicions UPC, 1999 [Consultation: 07/02/2024]. Available on: <https://upcommons.upc.edu/handle/2099.3/36260>. ISBN 8483012901.
- Ishikawa, Kaoru. Introducción al control de calidad. Madrid: Díaz de Santos, 1994. ISBN 8479781726.

Complementary:

- Mahoney, R. Michael. High-mix low volume manufacturing. New Jersey: Prentice Hall, cop. 1997. ISBN 013255688X.
- Askin, Ronald G.; Goldberg, Jeffrey B. Design and analysis of lean production systems. New York: John Wiley & Sons, 2002. ISBN 0471115932.
- Suzuki, Kiyoshi. Competitividad en la fabricación. 3a ed. Madrid: T.G.P. Hoshin, DL 2000. ISBN 8487022672.
- Cuatrecasas Arbós, Lluís. Volver a empezar : lean management. Barcelona: Profit, 2011. ISBN 9788415330233.
- Cuatrecasas Arbós, Lluís. Lean management : la gestión competitiva por excelencia : implantación progresiva en siete etapas. Barcelona: Profit, cop. 2010. ISBN 9788496998155.
- Rother, Mike; Shook, John. Observar para crear valor. Barcelona: Instituto Lean Management de España, 1999. ISBN 0966784340.

RESOURCES

Hyperlink:

- <http://www.manufacturing-europe.com/>- <http://www.lean.org/>- <http://www.institutolean.org/>- <http://www.leanglobal.org/>- <http://www.poms.org/>- <http://www.wclass.com/>- planet-lean.com. lean application examples